The Effect of Medicaid Payment Generosity on Access and Use among Beneficiaries

Yu-Chu Shen and Stephen Zuckerman

Objective. This study examines the effects of Medicaid payment generosity on access and care for adult and child Medicaid beneficiaries.

Data Source. Three years of the National Surveys of America's Families (1997, 1999, 2002) are linked to the Urban Institute Medicaid capitation rate surveys, the Area Resource File, and the American Hospital Association survey files.

Study Design. In order to identify the effect of payment generosity apart from unmeasured differences across areas, we compare the experiences of Medicaid beneficiaries with groups that should not be affected by Medicaid payment policies. To assure that these groups are comparable to Medicaid beneficiaries, we reweight the data using propensity score methods. We use a difference-in-differences model to assess the effects of Medicaid payment generosity on four categories of access and use measures (continuity of care, preventive care, visits, and perceptions of provider communication and quality of care).

Principal Findings. Higher payments increase the probability of having a usual source of care and the probability of having at least one visit to a doctor and other health professional for Medicaid adults, and produce more positive assessments of the health care received by adults and children. However, payment generosity has no effect on the other measures that we examined, such as the probability of receiving preventive care or the probability of having unmet needs.

Conclusions. Higher payment rates can improve some aspects of access and use for Medicaid beneficiaries, but the effects are not dramatic.

Key Words. Payment levels, Medicaid, access and use, propensity score methods.

Many state Medicaid policies can influence beneficiaries' access and use. Once enrolled, beneficiaries' approach to seeking care and their ability to get needed care will likely be related, among other factors, to state decisions about managed care and the generosity of provider payments. However, there is no clear consensus in the literature about whether or not payment generosity translates into improvements in beneficiary access and use. In this study, we re-examine the effects of Medicaid payment generosity on access and use among Medicaid beneficiaries in the context of other state policy choices.

Our study extends the previous literature in several ways. First, we use data collected between 1997 and 2002 to understand how payments affect access and use in the current health care environment. Second, unlike previous studies that focus mostly on a specific subgroup of the population (such as pregnant women), we analyze access and use for all Medicaid adults and children. Third, we explore a wide variety of access and use measures. Lastly, in order to identify the effect of payment generosity apart from unmeasured differences across areas, we employ comparison groups using propensity score reweighting.

Our primary data sources are three years of the National Surveys of America's Families (1997, 1999, 2002). We supplement this database with a survey of Medicaid capitation rates and other county-level data to capture the policy and the local environment. We examine the effect of Medicaid payment generosity on several access and use measures that can be broadly categorized into the following areas: continuity of care, preventive care, visits, and perceptions of provider communication and quality of care. We use the same empirical strategy, but estimate models for adults and the children separately.

Previous Literature

Economists have modeled physician decisions about supplying care to Medicaid patients in the context of a monopolistically competitive firm that has some ability to set prices in the private market (e.g., Sloan, Mitchell, and Crownwell [1978] and Decker [1992]) and faces a perfectly elastic demand curve in the Medicaid market. The amount and quality of care provided to the Medicaid population depends on private demand, the Medicaid price (below the private demand curve for many quantities of services), and the marginal cost of services. If the marginal cost curve never intersects the Medicaid price line, then the physician will not participate in Medicaid. However, if the Medicaid price equates to marginal cost at some quantity, then the physician

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will supply care with comparable quality to both private and Medicaid patients. In the current health care market where managed care dominates, the ability of physicians to set prices has greatly diminished. However, the amount of care and level of care quality supplied to the Medicaid population still depends on costs and what happens in the private market. Thus, this stylized framework would suggest that higher Medicaid payments should improve access to and use of health care resources among the Medicaid population.

In addition to these economic factors, there are other determinants of physician behavior that can moderate the effect of price changes. For example, medical ethics and professionalism could constrain or eliminate some of the choices physicians face when they decide whether to participate in a public program and how to treat patients (McGuire 2000). More importantly, whether or not payment increases translate into improved access hinges on the supply of physicians in an area and their willingness to participate in Medicaid programs. Increased payments might have little effect on beneficiaries' access because the most needy Medicaid enrollees tend to reside in inner cities that have very few physicians (Fossett et al. 1990; Fossett et al. 1992). Providers also decline to participate in Medicaid because of administrative burden and difficulty in working with Medicaid beneficiaries (Mittler and Gold 2003).

Very few studies explored the linkage between payment generosity and Medicaid beneficiary access and use or outcomes (Fox, Weiner, and Phua 1992; Cohen 1993; Cohen and Cunningham 1995; Currie, Gruber, and Fischer 1995; Coburn, Long, and Marquis 1999; Gray 2001). Those that did focused only on one or two access measures and on a subset of the Medicaid population, and used data from the late 1980s when Medicaid-managed care was much less widespread. Cohen (1993) found that low Medicaid fees hampered access to office-based physicians and encouraged use of hospital outpatient departments and emergency rooms, while Cohen and Cunningham (1995) found that more generous physician fees were associated with a greater likelihood of a child having a doctor as a usual source of care. Using state-level Medicaid physician fees in the late 1980s, Currie et al. (1995) and Gray (2001) found that increasing fees were associated with improved birth outcomes. On the other hand, Fox et al. (1992) and Coburn et al. (1999) found that payment changes have no effect on access to care. Based on these past studies, we expect higher Medicaid payments to improve access and use, holding other things equal. However, we expect the effect to be modest because of the other factors (discussed above) that could moderate the price effect.

Data and Methodology

National Survey of America's Families

The primary data sources for this study are the 1997, 1999, and 2002 rounds of the National Survey of America's Families (NSAF), a component of the Assessing the New Federalism (ANF) project at the Urban Institute. NSAF is a nationally representative household survey that collects economic, household, and health information on over 100,000 children and nonelderly adults each year. The NSAF combined telephone surveys with in-person interviews, and oversampled families with incomes less than 200 percent of the Federal Poverty Level (FPL). Further details of the survey and the health care component are contained in Kenney, Scheuren, and Wang (1999).

We impose two selection criteria on our analytical sample. First, we restrict the sample to those people who had the same insurance coverage for the entire 12 months prior to the survey because (1) our access and use measures refer to use during this time period and (2) this avoids potential estimation bias in our payment effects that might arise because people change their insurance coverage as a result of changes in their utilization patterns. Second, we restrict our sample to residents of urban areas. While Medicaid-managed care has become prevalent in urban areas, it is still not common in rural America. As such, over two-thirds of the residents in rural areas have missing capitation rate information (more details about the capitation rate survey are below). Our final analytic sample includes all nonelderly adults between the age of 18 and 64, and all children between the age of 0 and 17 who fit the above two criteria. As we describe in more detail below, we include the privately insured and uninsured populations to serve as comparison groups in our estimation model.

Medicaid Capitation Rate Survey

An argument can be made that a pure price measure, such as the index of Medicaid physician fees presented in Norton and Zuckerman (2000), would be the appropriate payment variable for these Medicaid access and use analyses. However, based on an analysis of data from Form CMS-64, physician fee-for-service payments accounted for only about 10 percent of Medicaid spending for acute care medical services (Bruen and Holahan 2001). Moreover, with about 60 percent of all Medicaid beneficiaries (and an even higher share of nonelderly beneficiaries) in managed care, it is not clear whether a variable based on fee-for-service payment rates is the best candidate.

As an alternative, we use a measure of payment generosity based on Medicaid capitation rate data at the county level collected through two Urban Institute state surveys. The first survey was conducted in 1998. In 2001, there was a follow-up survey and we used these data to update the information on capitation rates through 2001. To permit cross-state comparisons of capitation rates, the capitation rates reported by the states were adjusted so that they could be compared to each other as if each state were paying for the same types of Medicaid beneficiaries and the same set of services (Holahan, Rangarajan, and Schirmer 1999).[1] Results from the two surveys were summarized in Holahan et al. (1999) and Holahan and Suzuki (2003). We use these two surveys to construct a payment generosity index for 1997, 1999, and 2001.

Other Data Sources

To capture local health care and labor market characteristics, we supplemented the NSAF and capitation rate data with several other data sources, such as the Area Resource Files, Medicare payment rates and hospital wage index from Centers for Medicare and Medicaid Services (CMS), and American Hospital Association (AHA) annual hospital surveys.

Empirical Strategy Overview

In order to properly identify the effect of payment generosity on access and use among Medicaid beneficiaries, our analytical sample includes people covered by Medicaid as well as other individuals who serve as comparison groups. Primarily, we use the entire privately insured population for comparison purposes and employ a difference-in-differences strategy to estimate payment effects. The comparison group allows us to control for unobserved county-level factors that may affect both the Medicaid and privately insured populations and could be related to Medicaid payment levels. The assumption is that the privately insured population's access and use should not be affected by changes in Medicaid payment rates and thus can capture the difference in access and use because of underlying unobserved county characteristics. In addition, to control for individual characteristics, Medicaid program designs, and labor and health care market structures that influence health care access and use, we use probit and multinomial logit models to estimate the effect of Medicaid payment generosity on Medicaid beneficiaries' access to and use of health care services.

However, we also know that the privately insured population is quite different from the Medicaid population in many ways. One obvious difference relates to the income distribution in each group. Whenever the distribution of these types of observable factors has little overlap between two populations, difference-in-differences estimates based on these groups would be likely to result in a biased estimate of the payment effect (Rubin 1973; Imbens 1999). In our analysis, we address this problem by using the propensity score method (described below) to reweight the privately insured population so that the distribution of various observed characteristics, including income, is similar between our comparison (the privately insured population) and treatment (the Medicaid population) groups.

Although we use the full-year privately insured population as our comparison group to capture the unobserved heterogeneity across counties, we recognize that it is not the only comparison group available. Therefore, we also used the full-year uninsured population as an alternate comparison group (again applying the propensity score reweighting method to correct for differences in observable characteristics between the groups). The uninsured are similar to the privately insured in that they are not directly affected by Medicaid policies. Since large numbers of Medicaid beneficiaries come from and return to the ranks of the uninsured (Short and Graefe 2003), the uninsured may seem more comparable to the Medicaid population than the privately insured. We use results from the two comparison groups to assess the robustness of our findings. However, because there are fewer uninsured individuals than privately insured, the standard errors associated with the uninsured comparison group will be larger and, as such, there are likely to be fewer significant results.

Model Specification

We estimate the following model for each of the access and use measures:

$$\begin{aligned}\text{Prob}(Y_{ij}=1) = F(&\beta_0 + \beta_1 PUB_{ij} + \beta_2 PRICE_j + \beta_3 PRICE\_PUB_{ij} + \\ &\beta_4 POLICY_j + \beta_5 POLICY\_PUB_{ij} + \beta_6 X_{ij} + \beta_7 Z_j),\end{aligned} \tag{1}$$

where $PUB_{ij} = 1$ if person i was enrolled in Medicaid program the whole time in the past 12 months; $PRICE_j$ = medicaid payment generosity index for county j; $PRICE\_PUB_{ij}$ = interaction term between *PUB* and *PRICE*; $POLICY_j$ = a vector of other Medicaid policy variables for county j (more details below); $POLICY\_PUB_{ij}$ = interaction terms between *PUB* and the vector of policy variables; X_{ij} = a vector of personal characteristics of individual i such as demographics, family characteristics, labor market attachment (adult model only), and parental information (child model only); and Z_j = county characteristics of county j that are likely to affect access and use.

For dependent variables that are binary, we estimate the above model using a probit model. In this model, the privately insured population is the comparison group. β_1 captures the average difference in access and use between the privately insured and the Medicaid populations, and β_2 captures the average difference in access and use across counties with varying payment generosity. The coefficient of interest is β_3, the interaction term between the payment variable and the Medicaid indicator, which identifies the effect of payment generosity on the Medicaid population after controlling for the general differential in access and use across counties.

To further investigate payment effects on the amount of health care utilization, we estimate a second set of models in which the dependent variables are defined categorically, separating the number of visits into three levels (nonusers, occasional users, and frequent users of a particular type of service). We examine three types of visits: doctor/health professional visits, emergency department (ED) visits, and dental visits. These categorical variables allow us to investigate whether or not payment rates affect use differentially depending on how frequently people use health care services. This is important because some frequent users might be seriously ill. For these three categorical dependent variables, we use a multinomial logit model to examine the odds of being a frequent user or an occasional user as opposed to a nonuser for a unit change in payment.

One thing to note is that the ultimate effect of payments on beneficiaries' access to care occurs in two stages. First, through the effect on providers' willingness to participate and, then, through the effect on the quantity and quality of care they provide. Our estimation model can be seen as a reduced-form model because we do not differentiate between the two stages.

Propensity Score Reweighting

In this study, we rely on propensity score reweighting to refine comparisons groups for the Medicaid population. An overview of the propensity score methods can be found in Rubin (1997). The basic idea behind these methods is that they allow researchers to create a comparison group that has a very similar conditional probability of being in the treatment group, given a vector of observed covariates, as the people actually observed to be in the treatment group. As with all applications of the propensity score concept, we first use the entire sample of Medicaid and privately insured individuals to estimate a model of this conditional probability. Specifically, we estimate a probit model where the dependent variable is an indicator of whether an individual is enrolled in Medicaid, and the set of independent variables are individual characteristics (such as demographics, work characteristics) and local area characteristics (such as labor market and health care market characteristics). The predicted probability resulting from this model becomes the propensity score.

In our second stage, we use the propensity scores to create adjustment factors to apply to the survey weights associated with the observations in the privately insured group. The objective is to reweight these observations so that the weighted means of various observables in the comparison group will be comparable to those of the Medicaid population. We create the adjustment factor through a three-step process outlined in Barsky et al. (2002). First, we divide the distribution of propensity scores for the treatment group into 20 equal intervals (i.e., each interval contains 5 percent of the distribution). Second, we compute the share of the comparison group whose propensity scores fall within each of these 20 intervals. Third, we create the adjustment factor as the ratio of the share of the treatment group in each interval to the share of the comparison group in that interval.[2] These steps are also followed to reweight the observations in the uninsured comparison group.

The advantage of using the reweighting scheme instead of other propensity score approaches is that it retains estimation efficiency. For example, the most commonly used propensity score approach would match one observation from the comparison group to each observation in the treatment group based on the distance between their propensity scores. Under reweighting, we utilize all observations from the control group. However, those observations in the control group that are at the extreme end of the treatment group's distribution of propensity scores would receive a weight near 0 (and those that fell outside of the treatment group's distribution receive a 0 weight).

We estimate equation (1) on the reweighted samples and produce correct standard errors using the jackknife replication method (Flores-Cervantes, Brick, and DiGaetano 1999). The propensity score method is not without its limitations, however. Ideally, the comparison group would serve as the counterfactual for the treatment group, i.e., we assume that the Medicaid adults would have behaved the same way as the privately insured (or uninsured) adults with similar characteristics had they not been enrolled in Medicaid. But, such an assumption does not always hold. More generally, the propensity score method can only reduce the omitted variable bias to the extent that the unobserved characteristics are correlated with the observed characteristics in the estimation model.

Our empirical strategy has several limitations. Ideally, we would have liked to observe health care utilization patterns of the same set of Medicaid individuals before and after Medicaid payment changes (i.e., use the Medicaid population as their own control in a panel data setting), but cannot do so with the available dataset. However, we believe the combination of the difference-in-differences approach and the propensity score methods using the privately insured and the uninsured populations as comparison groups is adequate for our purpose. To the extent that an individuals' insurance status is affected by his access to the health care system and can therefore bias the estimate of Medicaid payment effect, we alleviate this potential estimation bias by limiting our sample to those whose insurance status remained the same in the 12-month period preceding the survey. In addition, we would have liked to include prices from the private market in the model. However, with the proliferation of different health maintenance organizations, it is difficult to obtain private price data that would best capture private health care prices in a county. Instead, we use hospital wage index and Medicare payment generosity index (defined below) to capture such area information.

Dependent Variables

We explore the following self-reported access and use measures[3] that refer to the 12-month period immediately preceding the survey.

Continuity of Care:

- Probability of having a usual source of care that is not an ED.
- Probability of seeing the same provider at that usual source of care.

Preventive Care:

- Probability of receiving a clinical breast exam for a woman (adult sample only).
- Probability of receiving a pap smear for a woman (adult sample only).
- Probability of making at least one well-child visit during the past 12 months (child sample only).

Health Care Utilization:

- Probability of visiting an emergency department at least once during the past 12 months.

- Probability of visiting a doctor or other health care practitioners at least once during the past 12 months.
- Probability of visiting a dentist at least once during the past 12 months.

Perceptions of Care:

- Probability of not getting or postponing medical care, surgery, or prescription drugs.
- Probability of being satisfied with quality of care received.
- Probability of being satisfied with the doctor–patient interaction.

In addition, we define three categorical variables for health care utilization. On the NSAF survey, a respondent was asked how many times each person visited the following types of providers in the past 12 months: emergency departments, doctors or other health professionals, and dentists. Based on answers to these survey questions, we categorized people into three use levels for each service: non-users (those with no visits), occasional users (those with one or two visits), and frequent users (those with three or more visits). The rationale behind our approach is that the need for a small number of visits can happen to anyone, but that having three or more visits is more likely to reflect an underlying sickness or a pattern of dependence on the health care system.

Medicaid Payment Generosity

We use Medicaid capitation rates to construct our payment generosity index for the three survey years. We define payment generosity as the ratio between a county's own capitation rate and the median capitation rate in the nation for the given year.[4] For counties with missing capitation rate information, we use the state-wide average (weighted by county population) capitation rate. These adjustments may introduce some measurement error into our estimates. However, the data from these capitation rate surveys still represents the best information on payment rates made on behalf of the majority of nonelderly beneficiaries. The variation in payment generosity comes from two sources: differences across counties and across the three years. The average Medicaid payment generosity index is 1.0. Counties in the bottom third of the Medicaid payment distribution received, on average, 81 percent of the median payment, whereas those on the top third of the distribution receive payments that are 22 percent above the national median.

Other Medicaid Policy Variables

In our model, we also control for the effects of other Medicaid policies on access and use. First, we include the percent of adults who would be eligible for Medicaid under each state's specific Medicaid rules. Second, we include indicators for counties under alternative Medicaid managed care arrangements, since managed care has been shown to affect access and care among the beneficiaries. More details about the construction of these Medicaid managed care indicators can be found in Garrett, Davidoff, and Yemane (2004) and Zuckerman, Brennan, and Yemane (2002).

Other Independent Variables

Other covariates in the model can be broadly grouped into two categories: individual and county characteristics. Individual characteristics include demographic factors (age, gender, race/ethnicity, immigration status, health condition, and education), family structure (marital status and number of children), and labor market attributes (work status, job tenure, industry, and employer size). County characteristics are designed to capture local economic and health care market conditions. We include the Medicare hospital wage index and unemployment rate to capture the general economic condition of the county. In addition, we include information on per capita health care resources, the availability of public hospital beds, general and family practitioners, and managed care penetration. To capture differences in health care costs, we use a Medicare payment generosity index, which is defined as the Medicare capitation rate in a county divided by the median Medicare capitation rate in the nation in a given year.

RESULTS

Table 1 compares the descriptive statistics of individual characteristics for Medicaid adults and privately insured adults (both the original and the reweighted sample by the propensity scores). Columns 1 and 3 show that Medicaid adults are different from the privately insured adults in many dimensions. The Medicaid adults are more likely to be female (65 percent versus 51 percent), African American (29 percent versus 11 percent), poor (51 percent versus 4 percent, under 100 percent federal poverty line), single parents (28 percent versus 4 percent), have no high school diploma (73 percent versus 35 percent), and report fair/poor health (44 percent versus 8 percent)

Table 1: Individual Characteristics of Sample Population—Adults

	Treatment Group		*Control Group*			
	All Medicaid Adults		*All Privately Insured Adults*		*Propensity Score Reweighted Group*	
	Mean	*SE*	*Mean*	*SE*	*Mean*	*SE*
Age and gender						
Age	39.41	(0.27)	40.36	(0.08)	39.73	(0.46)
Male	0.35	(0.01)	0.49	(0.00)	0.39	(0.02)
Race and ethnicity						
White, non-Hispanic	0.46	(0.01)	0.72	(0.00)	0.48	(0.02)
African American	0.29	(0.01)	0.11	(0.00)	0.29	(0.02)
Hispanic	0.21	(0.01)	0.10	(0.00)	0.18	(0.01)
Asian and others	0.04	(0.00)	0.07	(0.00)	0.05	(0.01)
Citizenship						
U.S.-born citizen	0.87	(0.01)	0.87	(0.00)	0.85	(0.01)
Foreign-born citizen	0.06	(0.01)	0.07	(0.00)	0.08	(0.01)
Foreign-born alien	0.07	(0.00)	0.06	(0.00)	0.07	(0.01)
Education						
No H.S. diploma	0.73	(0.01)	0.35	(0.00)	0.71	(0.01)
At least H.S. diploma	0.21	(0.01)	0.31	(0.00)	0.21	(0.01)
B.A. or above	0.06	(0.01)	0.33	(0.00)	0.08	(0.01)
Income						
Poor (<100% PL)	0.51	(0.01)	0.04	(0.00)	0.49	(0.02)
Nearpoor (100–300 PL)	0.39	(0.01)	0.25	(0.00)	0.39	(0.02)
Nonpoor (>300% PL)	0.10	(0.01)	0.71	(0.00)	0.12	(0.00)
Family structure						
Single parent	0.28	(0.01)	0.04	(0.00)	0.27	(0.02)
Married with kids	0.17	(0.01)	0.35	(0.00)	0.19	(0.01)
Married without kids	0.10	(0.01)	0.30	(0.00)	0.12	(0.01)
Health status						
Report fair or poor health	0.44	(0.01)	0.08	(0.00)	0.45	(0.02)
Have work limitation	0.88	(0.01)	0.74	(0.01)	0.93	(0.03)
Number of observations		8,886		72,563		72,446

Data source: 1997, 1999, and 2002 National Surveys of America's Families.

SEs reported as 0.00 are less than 0.005.

SE, standard error.

than the privately insured population. Similar patterns are observed for children in Table 2. The fifth column of both Tables 1 and 2 show that after the propensity score reweighting process, the reweighted privately insured sample is much more similar to the Medicaid population on these observed characteristics. For the rest of the results section, we use this reweighted privately insured population as our comparison group.

Table 2: Individual Characteristics of Sample Population—Children

	Treatment Group		*Control Group*			
	All Medicaid Children		*All Privately Insured Children*		*Propensity Score Reweighted Group*	
	Mean	*SE*	*Mean*	*SE*	*Mean*	*SE*
Age and gender						
Age	7.35	(0.08)	8.72	(0.04)	7.74	(0.19)
Male	0.51	(0.01)	0.51	(0.00)	0.52	(0.02)
Race and ethnicity						
White, non-Hispanic	0.29	(0.01)	0.68	(0.00)	0.35	(0.02)
African American	0.35	(0.01)	0.12	(0.00)	0.30	(0.02)
Hispanic	0.33	(0.01)	0.13	(0.00)	0.31	(0.02)
Asian and others	0.04	(0.00)	0.07	(0.00)	0.04	(0.01)
Health status						
Report fair or poor health	0.11	(0.01)	0.02	(0.00)	0.11	(0.02)
Report activity limitation	0.16	(0.01)	0.07	(0.00)	0.17	(0.02)
Parent's education						
No H.S. diploma	0.69	(0.01)	0.31	(0.00)	0.64	(0.02)
At least H.S. diploma	0.24	(0.01)	0.30	(0.00)	0.27	(0.02)
B.A. or above	0.07	(0.00)	0.39	(0.00)	0.09	(0.01)
Parent's Citizenship						
U.S.-born citizen	0.78	(0.01)	0.87	(0.00)	0.77	(0.02)
Foreign-born citizen	0.05	(0.00)	0.07	(0.00)	0.08	(0.01)
Foreign-born alien	0.16	(0.01)	0.06	(0.00)	0.15	(0.01)
Family income						
Poor (<100% PL)	0.57	(0.01)	0.04	(0.00)	0.56	(0.02)
Nearpoor (100–300 PL)	0.38	(0.01)	0.35	(0.00)	0.36	(0.01)
Nonpoor (>300% PL)	0.05	(0.00)	0.61	(0.00)	0.08	(0.00)
Parent's marital status						
Single parent	0.54	(0.01)	0.17	(0.00)	0.51	(0.02)
Number of observations		12,910		47,128		47,128

Data source: 1997, 1999, and 2002 National Surveys of America's Families.
SEs reported as 0.00 are less than 0.005.
SE, standard error.

In Table 3, we summarize the dependent variables for both Medicaid and privately insured adults and children. In general, columns 1 and 3 show that privately insured adults who share comparable characteristics with the Medicaid adults have better access to care than the Medicaid adults. The notable exceptions are the share seeing the same provider (81 percent Medicaid versus 77 percent privately insured) and the share being satisfied with care (85 percent Medicaid versus 82 percent privately insured). Likewise, privately insured children are better off with respect to most access and use

Table 3: Descriptive Statistics of Dependent Variables among Medicaid and Privately Insured Populations

	Adults				Children			
	All Medicaid Adults		*All Privately Insured Weighted by PSM*		*All Medicaid Children*		*All Privately Insured Weighted by PSM*	
	Mean	*SE*	*Mean*	*SE*	*Mean*	*SE*	*Mean*	*SE*
Continuity of care								
Share having a usual source of care other than ED	0.84	(0.01)	0.86	(0.01)	0.93	(0.01)	0.90	(0.01)
Share seeing the same provider at the usual source of care	0.81	(0.01)	0.77	(0.02)	0.81	(0.01)	0.84	(0.01)
Preventive care								
Share of women receiving breast exams	0.49	(0.01)	0.57	(0.02)	—	—	—	—
Share of women receiving pap smear	0.60	(0.01)	0.62	(0.02)	—	—	—	—
Share of women receiving both preventive care	0.41	(0.01)	0.49	(0.02)	—	—	—	—
Share with at least one well-child visit	—	—	—	—	0.73	(0.01)	0.66	(0.02)
Health care utilization								
Share with at least one ED visit	0.43	(0.01)	0.33	(0.02)	0.32	(0.01)	0.22	(0.02)
Share with at least one doctor/health professional visit	0.83	(0.01)	0.86	(0.01)	0.85	(0.01)	0.84	(0.01)
Share with at least one dental visit	0.53	(0.01)	0.65	(0.02)	0.78	(0.01)	0.77	(0.02)
Perception of care								
Share having unmet medical or drug need	0.17	(0.01)	0.18	(0.01)	0.05	(0.00)	0.06	(0.02)
Share being satisfied with care	0.85	(0.01)	0.82	(0.02)	0.88	(0.01)	0.86	(0.02)
Share having doctors that listened and explained things	0.73	(0.01)	0.75	(0.02)	0.78	(0.01)	0.79	(0.02)
Number of observations		8,886		72,563		10,127		47,128

SE, standard error; PSM, propensity score method; ED, emergency department.

measures except that substantially fewer of them received well-child care relative to the Medicaid children (73 percent Medicaid versus 66 percent privately insured).

The full estimation results for equation (1) are available from the authors upon request. In Table 4, we summarize the key coefficient, β_3, for all binary dependent variables for both adults and children. We report the marginal effect instead of the regression coefficient. We also rescaled the policy variables so that the marginal effects, evaluated at the mean, are easier to interpret. For example, we multiplied the payment generosity index by 10 (so the mean index is 10 instead of 1). The coefficient, β_3, for having a usual source of care is 0.015 and is statistically significant at the 0.05 level. This indicates that for an one-unit increase in the rescaled payment generosity index (from 10 to 11), a Medicaid adult's probability of having a usual source of care is improved by 1.5 percentage points relative to the comparison group.

Table 4 shows that higher payments have no statistically significant effect on a woman's probability of getting either a breast exam or a pap smear. In terms of the probability of visits to various health care settings, we find that higher payments significantly increase an adult's probability of having a doctor/health professional visit (the marginal effect is 1.6 percentage points), but does not affect the probability of a visit to an emergency department or dentist. Payment generosity is also associated with better communication between doctors and the adult patients. However, payment generosity does not appear to affect children's access to and use of health care services. Higher payments only have a significant and positive effect on parents' satisfaction with the overall care quality for their children.

In Table 5, we summarize the results of the three-level visit variables. For the adult population, the results are consistent with those in Table 4—higher payments increase both the odds of being an occasional and a frequent visitor to the doctor's office relative to nonusers. For children, higher payments appear to reduce the odds of being an occasional ED user relative to nonusers ($p < .10$), but have no statistically significant effect on the odds of being a frequent ED user relative to being a nonuser (owing to the large standard errors around the point estimate).

The Uninsured Population as the Comparison Group

We also investigated payment effects using the uninsured population as the comparison group. Among the dependent variables that were shown to be affected by payment differences when using the privately insured comparison

Table 4: Summary of Marginal Effects of Payment Generosity on Access and Use among the Publicy Insured Population

	Comparison Group Is Propensity Score Reweighted Privately Insured Individuals			
	Adults		*Children*	
Dependent Variables	*Marginal Effect*	*SE*	*Marginal Effect*	*SE*
Continuity of care				
Share having a usual source of care other than ED	0.015**	(0.007)	−0.001	(0.004)
Share seeing the same provider at the usual source of care	0.019	(0.011)	0.016	(0.010)
Preventive care				
Share of women receiving breast exams	0.013	(0.013)	–	–
Share of women receiving pap smear	0.019	(0.014)	–	–
Share of women receiving both breast exam and pap smear	0.023	(0.014)	–	–
Share of children receive at least one well-child care visits	–	–	0.000	(0.008)
Type of visits				
Share with at least one ED visit	0.005	(0.012)	−0.013	(0.008)
Share with at lest one doctor/health professional visit	0.016**	(0.006)	−0.002	(0.005)
Share with at least one dental visit	−0.011	(0.011)	−0.011	(0.008)
Perception of care				
Share having unmet medical or drug need	0.005	(0.009)	0.002	(0.003)
Share being satisfied with care	−0.003	(0.008)	0.013**	(0.005)
Share having doctors that listened and explained things	0.030*	(0.016)	0.012	(0.009)

Note: SEs are estimated using the method of jacknife replications to reflect complex survey design.

*Coefficient is statistically significant at 0.10 level.

**Coefficient is statistically significant at 0.05 level.

ED, emergency department; SE, standard error.

Table 5: Summary of Coefficients on the Interaction Term between Payment Generosity and Public Enrollment by Levels of Utilization—Comparison Group is the Privately Insured Population

	Occasional Relative to Nonusers		*Frequent Relative to Nonusers*	
Dependent Variables	*Coefficient*	*SE*	*Coefficient*	*SE*
Adults				
Emergency department visits	0.02	(0.05)	0.03	(0.08)
Doctor/health professional visits	0.14**	(0.07)	0.14**	(0.06)
Dental visits	– 0.04	(0.05)	0.13	(0.09)
Children				
Emergency department visits	– 0.07*	(0.04)	– 0.07	(0.12)
Doctor/health professional visits	– 0.06	(0.06)	0.01	(0.06)
Dental visits	– 0.08	(0.05)	– 0.01	(0.08)

Note: SEs are estimated using the method of jacknife replications to reflect complex survey design.
*Coefficient is statistically significant at 0.10 level.
**Coefficient is statistically significant at 0.05 level.
SE, standard error.

group, the magnitudes of the estimates are very similar, but the standard errors are much larger because of the smaller sample size of the uninsured population.[5] This leads to fewer statistically significant findings, but there are some notable exceptions. In the adult population, we found that although Medicaid and uninsured women, on average, had the same probability of receiving preventive care, Medicaid women in higher payment counties have a higher probability of getting a clinical breast exam, as well as a higher probability of getting comprehensive preventive care (receiving both a breast exam and a pap smear). In addition, although Medicaid adults, on average, had much higher odds of being a frequent ED user than a nonuser relative to the uninsured population, higher payments reduced those odds. We also detected beneficial payment effects on ED utilization among children. Specifically, we found that higher payments reduced the odds of being an occasional ED user as opposed to a nonuser.

Sensitivity Analysis

The payment generosity index we used was based on capitation rates. Although we believe that it is the best measure to capture local variation in Medicaid payments, one might argue that a "pure" price index that directly measures payment to physicians is the more appropriate measure. In a different model, we substituted the *PRICE* variable we used in equation (1) with a state-wide physician fee index. The physician fee data were collected by an Urban Institute survey (Norton and Zuckerman 2000). Although the state-level physician fee index should produce slightly smaller standard errors because of the aggregate nature of the variable, it does not capture payment variation at the county level. As such, this causes estimated effects to be biased toward zero (Greene 1997). Although this happened in some cases (e.g., adult probability of a physician/health professional visit), overall we obtained results similar to those using our main model.

DISCUSSION

This study adds to the literature on the effects of Medicaid payment generosity by providing national estimates using a comprehensive set of access and use measures for both adult and child beneficiaries. Many previous studies (cited earlier) focused on specific services and subgroups of beneficiaries and relied on data from a few states. In general, our findings suggest that Medicaid payment rates had small and limited effects on access and use for both adults and children and, where there were significant effects, they tended to vary somewhat depending on whether we used the privately insured or uninsured comparison groups. However, in all cases where we detected significant payment effects, we found that higher rates improved access and use for Medicaid beneficiaries. Given the broad perspective of this study, it is not entirely surprising that we found results consistent with studies that found some benefits to higher Medicaid rates as well as those that found no effects.

Despite the limited effects of Medicaid payments on access and use, we still find that beneficiaries are more satisfied with the care they receive when payments are higher. This is evident both in adults' positive perceptions about their provider interactions and parents' comfort with the quality of care their children receive. Given that the survey data we use in this study do not provide detailed information about the reasons why beneficiaries seek care or the content of the care that is received, these beneficiary assessments may be the strongest indicator we have of the fact that higher Medicaid payments actually produce better care for beneficiaries.

An obvious question raised by these findings is "why were Medicaid fees not strongly related to many of the indicators of beneficiaries' access and use?" There are several factors that contributed to this finding. For instance, the gap in access between Medicaid and privately insured population is small to start with. Any potential impact of increasing payment rates is likely to be constrained. Another possibility is that the magnitude of changes in capitation rates might not be as large as those observed in physician fees. However, our sensitivity analysis suggests that payment generosity based on either measure has similar effects. In addition, capitation rates tend to follow fee-for-service rates closely, and states usually adjust both sets of rates in tandem (Holahan and Suzuki 2003).

Perhaps the most likely factor producing the weak impact of Medicaid payments is that higher payment rates will have their most direct impact on provider participation. We recognize, however, that there has been little consensus on the effect of Medicaid fees on physician participation in the program.[6] Moreover, the indicators used here may be influenced by factors other than provider availability. For example, if some beneficiaries have a low proclivity to seek care, this can weaken the link between payment rates and access and use. Taking these results together, our expectations about detecting price effects on access and use measures were necessarily modest.

Many states have turned to provider payment cuts as an alternative to more significant reductions in Medicaid eligibility or benefit packages as they struggled to deal with recent budget pressures. Our results indicate that such policy moves could adversely affect beneficiaries' ability to have a usual source of care and increase the burden on emergency departments to serve Medicaid beneficiaries. Alternatively, states that are able and willing to set higher payment rates may enhance some aspects of their beneficiaries' access and use and make the program more attractive to potential enrollees.

However, the potential opportunity costs of higher payments should not be ignored. For example, states that have the financial resources may be choosing between higher payments and policies aimed at keeping eligible beneficiaries enrolled. Given research that suggests that Medicaid beneficiaries enrolled for a full year have better access than those enrolled for only part of a year (Brown et al. 2003), it may be that using resources to support 12-month continuous enrollment has a greater payoff than increasing rates. More broadly, given the limited impact of Medicaid rates on beneficiary access and use, payment cuts might be an appropriate policy option when state budgets get tight.

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NOTES

1. Rates were adjusted so that they reflected payments that are often carved out from Medicaid capitation. Specifically, the underlying data used in the payment generosity index should be assumed to include payments for mental health and substance abuse services, prescription drugs, dental care, organ transplants, and vision care.
2. In our approach, the share of the treatment group in each interval is set at 5 percent. Other intervals are considered in a sensitivity analysis.
3. These access and use measures are part of the broader quality of care indicators. There are other quality of care indicators, such as waiting time to see a physician, different treatment options, and medical technology, that we did not study in this analysis.
4. Because the years of Medicaid capitation rate survey do not correspond exactly to the NSAF data years, we made a few adjustments to match the two survey years. First, we use the growth rate in Medicaid acute care spending per enrollee between 1997 and 1998 (Bruen and Holahan 2001) to trend backward the 1998 capitation rate to 1997 dollars. Second, we use the change in capitation rate between 1998 and 1999 reported in the 2001 survey to update the 1998 capitation rate to 1999. Third, we use the reported 2001 capitation rate to match the 2002 NSAF survey.
5. The results are available from the authors upon request.
6. Some studies found that low reimbursement rates in Medicaid are associated with low participation rates among providers (Mitchell 1991; Coughlin, Long, and Holahan 2001; Bindman et al. 2002), while others have shown that payment levels play a relatively small role in shaping physician's participation decisions (Perloff, Kletke, and Fossett 1995; Perloff et al. 1997; Prestowitz and Streett 2000).

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